# Assignment 4

March 21, 2014

Analyse the running times of the following sorting algorithms, and verify their theoretical bounds: (a) Insertion sort (b) Merge sort (c) Heap sort (d) Quicksort (e) Counting sort.

- You may use any standard implementation of the sorting algorithms, provided you are convinced it is correct.
- Make sure that you run the different algorithms in similar environments.
- Produce plots for each algorithm covering the best-case, the average-case and the worst-case behaviour. Thus, there will be three separate figures for the three different cases, with five plots on each.
- Vary the range of input from 1 to (atleast) 500,000 in steps of 1000. You may assume only integers are to be sorted.
- For each run, log the running time in a manner which facilitates their automatic processing.
- Using the plots obtained, work out the values of the constants in the asymptotic notation in each case.